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Strategies and Technologies Used in Teaching the Front Crawl Stroke

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Abstract
Purpose. Sometimes the initiation phase into swimming is neglected in favor of the learning phase, which constitutes a methodical error. During the learning phases swimming trainers and instructors rely on a series of exercises. These can be completely different from one another. **Methods.** We have exercises that are extensive in nature and exercises that are repetitive in nature, used even during the perfecting phase and test exercises (be it test or control). **Results**. Thus, by structuring the exercises and methodical means used in teaching swimming, I have achieved an important didactic work aimed at helping swimming coaches and instructors as well as students from the faculty of physical education.

Key words: means, systematization, efficiency, succession, model.

Introduction

In order to achieve notable results in performance swimming, I thought that it would be useful to systematize the most efficient means of initiation, learning and improving related to the technique of front crawl swimming.

The paper aims to:

- collect and systematize the main means of learning front crawl in different phases or stages of the instruction process;
- offer theoretical and experimental research methods regarding the very important role played by the ways through which swimming is taught during the initiation phase for children aged 5 to 7.

Increasing the efficiency of training, of the instructional and educational process requires the establishing of precise end goals, of a well thought out action plan as well as the choosing of the most efficient means and resources of action (Carla, 1999: 42).

Choosing training methods as well as the judicious usage of the most efficient methods (specific or otherwise) related to swimming must lead to:

- A proper acquirement of basic swimming skills (floating, gliding, breathing) and front crawl specific elements.
- Improvement of motric abilities
- Proving the validity of the methods and tests used in order to quantify the qualitative development of motric abilities.

Applying a system of specialized algorithms for the duration of 3 months, which are meant to facilitate the acquiring and consolidation of basic swimming skills and front crawl specific techniques (Bitang, 2009: 25) an important improvement has been noticed in the training of the subjects.

The preparation of the most appropriate exercises requires a preliminary study of modern techniques, of the biomechanics related to movement, of age group biological and psychological par-

ticularities and especially of the methodological particularities of teaching swimming to children (Maglisho E., 1990: 31).

Methods

This paper aims to:

- research the history and development of front crawl
- research the biomechanical, biological and psychological particularities of children involved in practicing swimming
- develop the knowledge base and research the technical aspects of front crawl
- collect and systematize dedicated exercises and to group them according to the stages involved in learning how to swim.

The experiment consisted in applying certain methods and means of teaching swimming and consolidating basic elements of technique pertaining to both swimming in general and front crawl in particular. In order to ensure the conditions for a proper experiment I have introduced 3 sets of tests:

- the initial testing: 1 week after starting the activity
- the intermediary testing – one and a half month after starting the activity
- the final testing: after the end of a three months period

During these testing stages I have graded the children`s evolution with marks from 1 to 10, corresponding to the appropriation level of basic swimming techniques and front crawl style. At the end of the 3 month training period I have tested their skills in covering a distance of 25 meters using front crawl.

The experiment was conducted on 25 children. The courses took place 5 times a week. The subjects were between 5 and 7 years of age.

Each child has been subjected to the following tests (Cretulescu, Jivan, Carla, 1992: 41):

- horizontal floating with apnea

- chest floating
- aquatic breathing
- leg movement in front crawl
- arm movement in front crawl
- coordination between arm and leg movement in front crawl
- coordination between breathing and arm movement
- coordination of arm, leg and breathing
- front crawl swimming dive start

Results

In order to process and render the data, I have used the following statistical indicators: arithmetic mean, amplitude, medium deviance, standard deviance and the coefficient of variation.

Table nr. 1 The dynamics of experimental performance

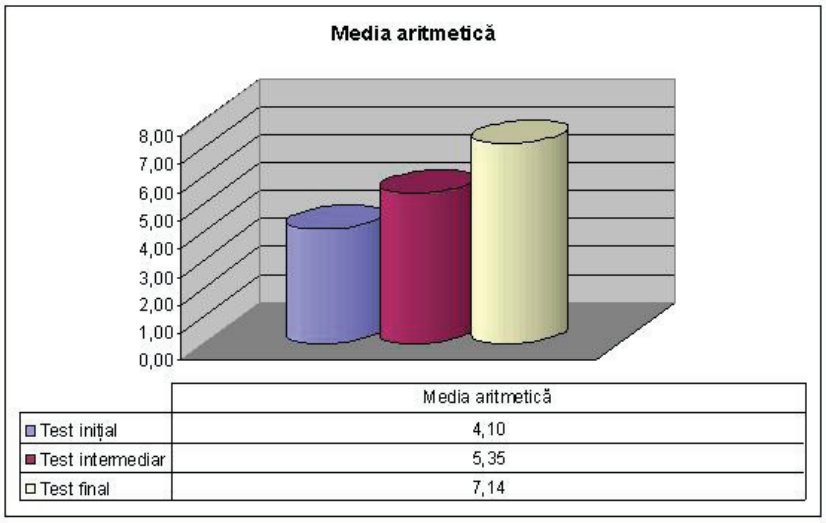
	Statistical parameters	Initial test	Intermediary test	Final Test	Difference between Initial/ Final Test
Arithmetic mean	**X**	4,10	5,35	7,14	**3,04**
Amplitude	**W**	2,70	2,35	2,10	**0,60**
Medium deviance	**Am**	0,70	0,65	0,55	**0,15**
Standard deviance	**S**	0,80	0,64	0,60	**0,20**
Coefficient of variation	**Cv**	19,48	12,00	9,02	**10,46**

Following the evolution of the **arithmetic mean** from table 1 and graph 1, we can conclude the following: the arithmetic mean of the included sample group totaled 4.10 points during the initial testing, which subsequently increased to 5.35 points during the intermediary testing phase. Therefore we have a 1.25 point increase.

During the final testing the average rose to 7.14 points which signifies an increase of 3.04 points from the initial testing. Observing the entire period of testing it becomes obvious that the greatest increase in performance occurred between the second and third stages of testing.

This fact can be interpreted as follows:

- After correctly learning the basic swimming skills, subjects can appropriate and consolidate the technical elements pertaining to front crawl.
- The means used for the technical training part have been chosen and used judiciously.



	Media aritmetică
Test inițial	4,10
Test intermediar	5,35
Test final	7,14

Graph nr. 1 Arithmetic mean

Following the evolution of the simplest statistical indicator, **amplitude** (W), we can conclude the following: if at the beginning of the experiment the difference in the grades totaled 2.70 points, this result decreases to 2.35 points during the initial phase, is further reduced to 2.35 points during the intermediary testing and finally drops to 2.10 points. These results show that value differences

between subjects are becoming increasingly marginal because they (i.e. the subjects) were able to acquire both basic swimming techniques and front crawl specific procedures in a unitary manner.

In the case of the **medium deviance** we can observe the same homogenization of results as registered in the case of amplitude. During the final evaluation this statistical indicator is modified by only 0.15 points.

The same applies for the **standard deviance**, in this case the variance being of 0.20 points.

The **coefficient of variance** displays a homogenization of subject values from the perspective of the registered performance. Therefore, even if statically the sample group is very homogenous between 0 and 10 %, with the exception of the first and second testing phase, the results registered fall within these boundaries. Between the first and the second testing phase there is a 10% decrease in the rate of distribution.

Standardizing the experimental sample group, based on the analysis of the other statistical indicators used in this paper, is specific to collectives trained through a well-conducted, instructive-educational process.

The analysis of the distribution indicators shows the homogenization of the experimental sample group through the quality of the motric act related to swimming. There is an obvious progress regarding the acquiring of swimming techniques.

Because the means used during the training sessions are considered as effects there is an obvious improvement in the evolution of the subjects as well as in the quality of the swimming technique.

This fact is perfectly explainable if we consider the fact that technical training is highly important for acquiring a basic skill set in swimming.

Finally, we can assert that after analyzing the collected data, the research hypothesis is confirmed: the differences between the control sample group (considered as such during the initial testing) and the experimental one (considered as such during the final testing) are significant. The fact is further proved by the fact that

the time allocated for the research is rather short, allowing only for insignificant changes in the metabolism of the children included in the test.

The research of the methodical aspects of teaching and perfecting front crawl lead to the conclusion that swimming trainers and instructors rely on a series of exercises. Each exercise group has well determined objectives, which means that they are applied in a certain succession. At the same time certain exercises have an extensive character, allowing for an easy transition from one group to the other, while other exercises are used regularly for correcting or improve certain technical details.

Conclusions

After statistically analyzing the collected data, the following can be said:

1. The results obtained after each test have shown a continuous improvement, the progress being obvious. The other statistical indicators considered have registered values specific to well trained and formed collectives. The evaluation of technical skills, although much more difficult to quantify based on a rigorous algorithm, have shown an improvement of the basic skillset, which in itself is tributary to an ingenious choice of the independent variables.

I do believe that an emphasis on the technical part of training, especially for this age group when the psychophysiological traits of the subjects allow for motric development and an increased receptivity, is highly important. The plasticity of the nervous system plays an equally significant role, fact that becomes obvious when considering the ascending learning curve of the basic skill appropriation level for both regular and 25m front crawl swimming.

Of course, a rigorous quantification of the influence played by technique in sport performance is hard to achieve but, in accord with the field related literature, I believe that for this age group the efficiency of the methods used in learning basic swimming skills as well as front crawl must take precedence over physical, tacti-

cal and psychological training. The results achieved in both motric ability and technical accuracy confirm the statistically expressed hypothesis.

I believe that the methods used during the initiation phase and during the technical training phase of teaching front crawl have reached their goal.

2. Generally speaking, teaching swimming is a gradual process that involves certain stages that each start and end in different periods, according to the talent, motivation and interest shown by children who either learn how to swim or are selected for performance swimming. Some of these are:

- the initiation phase
- the learning stage
- the developmental stage
- the individual development stage

3. One of the most important stages of teaching swimming is the children`s initiation phase which must begin as early as possible and must end before they reach 6 or 7 years of age.

The main objectives pertaining to the initiation phase are aimed at acquiring the following: getting used to water, floating, submerging both body and head underwater, breathing and gliding.

These elements are the first means for evaluating children with an innate talent for swimming. Those who will get accustomed to water more quickly are promoted to the advanced group, fact that conditions the swimming learning phase itself.

The methodical means used in this stage are usually neglected in practice. For this reason many "talents" are lost from the very beginning. A sudden promotion to the second stage, i.e. that of learning a swimming technique, proves to become a psychological stress factor for many children and results in: fear of water, refusal to enter the water and learning how to swim.

4. Considering the formative stages of developing a habit for swimming, of improving the front crawl stroke as well as the specific character of the swimming lessons aimed at children, I have reached to the conclusion that the exercises used in teaching swimming can be divided into 12 groups:

- preparatory exercises on land
- water accommodation exercises
- underwater accommodation with apnea
- exercises for developing aquatic breathing
- exercises for learning horizontal floating
- exercises for learning gliding
- exercises for learning leg movement
- exercises for learning arm movement
- exercises for learning and perfecting the front crawl – movement coordination
- exercises for learning and perfecting the swimming dive start
- exercises for learning and perfecting the return
- exercises for perfecting the front crawl

5. Each exercise group has a well determined aim in accord with the progress achieved by the practitioners or with the stages of instruction. The order in which these exercise groups are applied is related to aforementioned factors.

6. The exercises for learning and perfecting the swimming start and turn are learned gradually after the participants are able to cover easily various lengths by swimming.

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